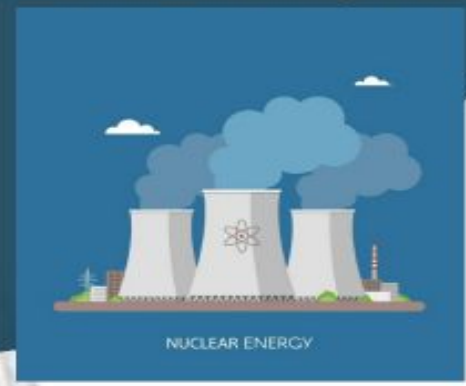
Nuclear Pollution



Why do we use nuclear energy?

- Nuclear energy decreases our dependence on fossil fuels. Since nuclear fuel contains much more energy.
- Creates little or no greenhouse gases
- Doesn't use a valuable resource - hydrocarbons
- Less pollution than fossil fuels (for example, fly ash)
- Cost-effective when a standardized reactor design is used
- Produces little waste



What is nuclear pollution?

Contamination of the atmosphere by radiation and radioactive particles is called nuclear pollution

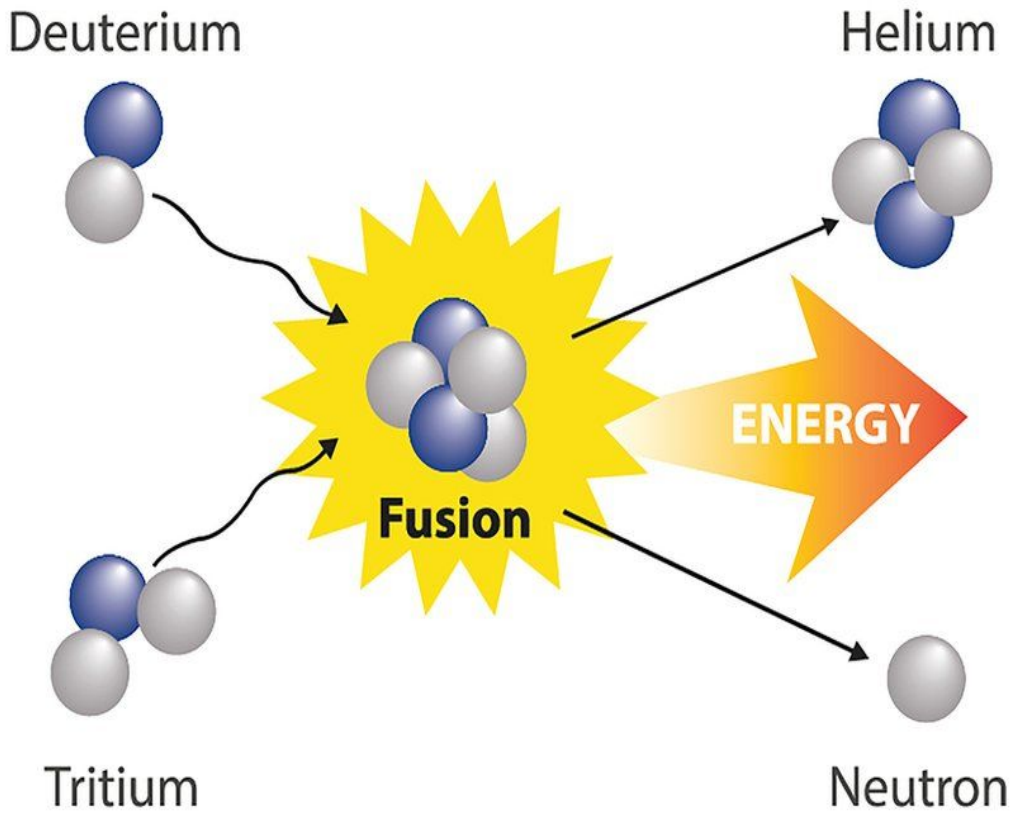


WHAT IS NUCLEAR POLLUTION?

- *One of the most important and dangerous type of pollution is nuclear pollution.*
- *Nuclear pollution is produced by nuclear explosion which are carried out for performing nuclear tests.*
- *Produced by generation of energy by nuclear fission or nuclear fusion.*

Nuclear Fusion

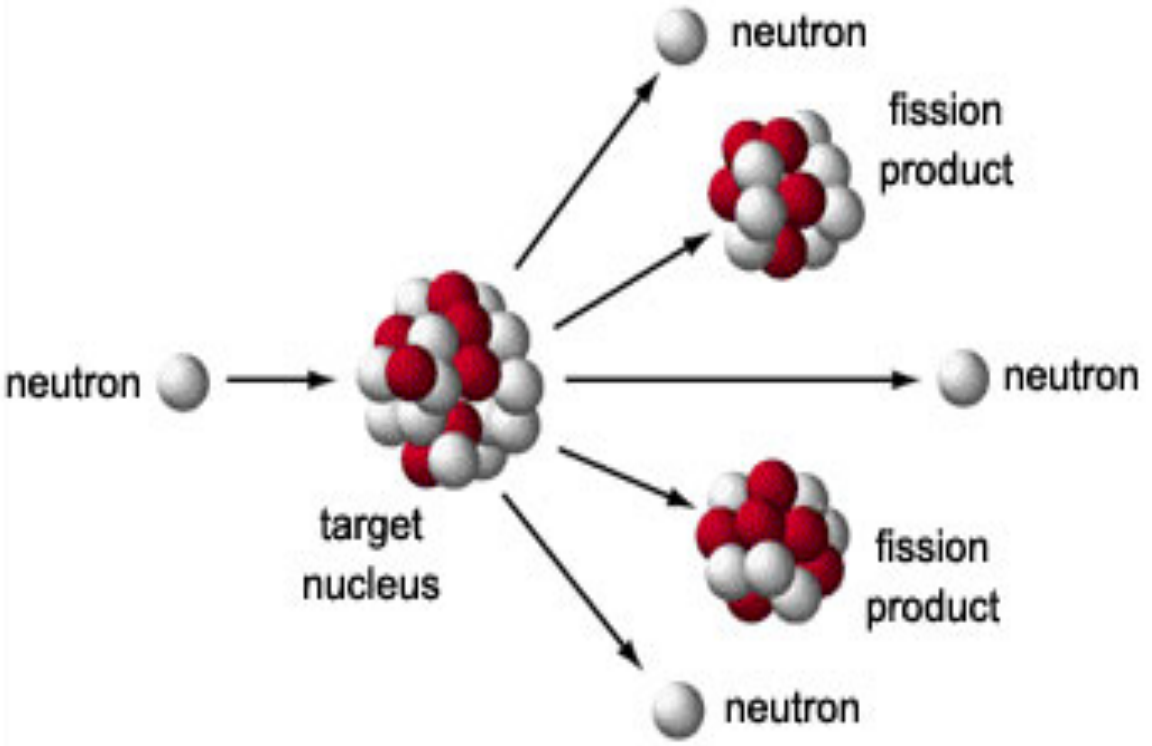
- The power that fuels the sun and the stars is nuclear fusion.
- Nuclear energy can be released by fusion of two light elements (elements with low atomic numbers).
- In a hydrogen bomb, two isotopes of hydrogen, deuterium and tritium are fused to form a nucleus of helium and a neutron.
- This fusion releases 17.6 MeV of energy.



Nuclear Fission

- In nuclear fission, it splits into several smaller fragments. These are equal to about half of the original mass. Two or three neutrons are also emitted.
- This 'missing' mass (about 0.1 percent of the original mass) are converted into energy according to Einstein's equation.

$E = mc^2$



HOW DOES IT ENTER OUR ATMOSPHERE??

- *Due to explosion about 15 to 20% of the radioactive particles enter into the stratosphere.*
- *Once they entered into the air they continue to fall on the earth after about every 6 month up to several years.*
- *Almost 5% of the radio active material entered into the troposphere, which is the lowermost layer of the atmosphere.*

Causes

1. Nuclear weapons testing
2. Nuclear power plants
3. Improper disposal of spent nuclear fuel
4. Accident/ damage to nuclear power plant

1.

2.

3.

4.

Nuclear weapons testing

- Begins with WWII: Bombing of Hiroshima and Nagasaki
- Nuclear arms race:- US, Russia, UK, France & China
- Nowadays, developing countries (N.Korea & Iran) are starting to be nuclear armed
- Testing the weapons involves explosions in the stratosphere
- Exploded debris emitting radiation falls back to the earth "Fallout"
- Fallout settles on vegetation and sea and enters the food chain



Nuclear power plants

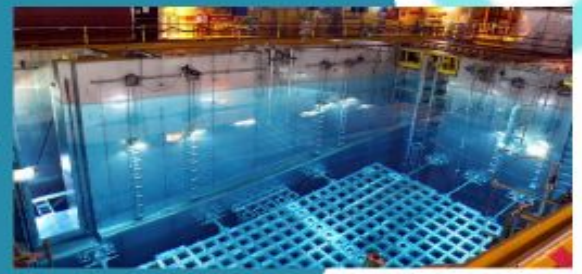
- Nuclear energy from radioactive fuel is used to heat up water
- steam is used to turn turbines that work the generators to produce electricity
- small amounts of radiation are released during this process into the water
- This may dispose off causing nuclear pollution



The energy we get from 1gm of pure Uranium
Is equal to energy received from the burning
Of 3500 tonnes of coal.

Improper disposal of spent nuclear energy

- spent fuel has highly radioactive atoms that are active for almost 600 years and more
- governments dump this fuel as far as possible from their countries
- favorite dumping area 'Pacific ocean'
- some store spent fuel in underground water pools
- danger of seepage into land, contaminating underground water and surrounding lands



Accidents

Chernobyl

- Russian Nuclear power plant
- An accident occured in 1986
- Rapid steam productions lead to a steam explosion
- Fallout was felt over Russia, Ukraine & Belarus
- individuals exposed to radiation suffered acute radiation poisining
- area surrounding the reactor is still not suitable for inhabitation
- https://www.youtube.com/watch?v=w8kwBAc_FrA

Nuclear accident in Russia 2019

- on August 8 a deadly blast occured at Nyonoksa military weapons testing range
- released radioactive isotopes



Effects on Animals:

- *It may include tumor, dry, itchy skin, hair loss and discoloration of the skin around the tumor site.*
- *In addition, these particular tumors often release a disagreeable odour as the cancerous cells die.*
- *More serious side effects may include some nerve damage and either the death or hardening (called fibrosis) of healthy tissue.*





Effects on Humans:

- *1)Skin Diseases*

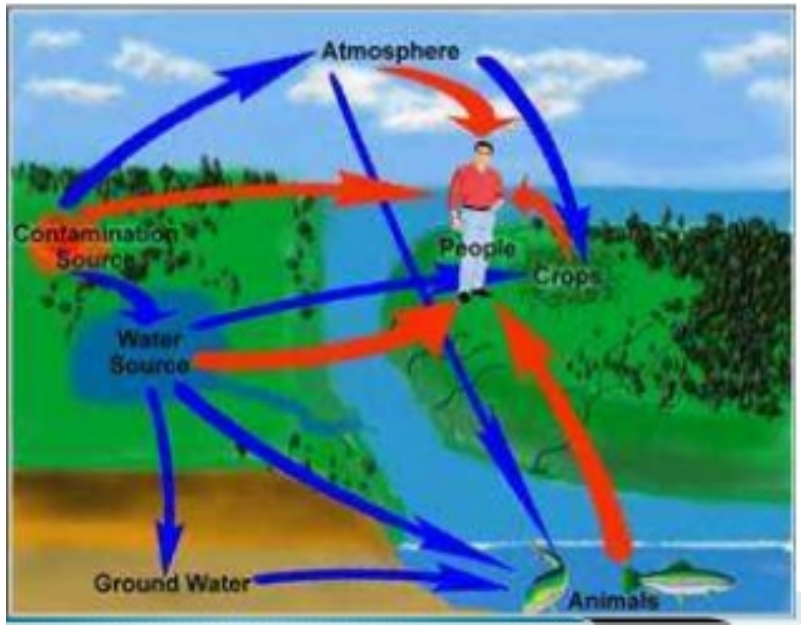
  2)Damage of Reproductive Organs

  3)Causes of Abnormality in Bone Marrow

  4)Destroys Retina of Eyes

  5)Shortening of Life Span







Control Measures

- *Proper maintenance of nuclear plants.*
- *Preventive nuclear experiments.*
- *Safe Transportation.*
- *Ban usage of nuclear weapons.*
- *Proper Storage.*
- *Minimize use of nuclear elements.*
- *Extraction of radioactive elements from nuclear waste.*

Prevention



- Radiation waste should be carefully disposed and they are usually held in radiation-shielded containers and buried underground

- Radiation waste should be isolated in locations such as specific caves or abandoned mines.



Conclusion

Nuclear energy is a clean source of energy and has great potential but should be used responsibly for the safety of the environment and people

Sources

Thank you